

REMARKS

Claims 69-81, 83-86, and 88-91 are currently pending in the application. Claims 69, 70, 73, 88, and 89 stand rejected. Objections have been made to claims 71, 72, 74-78, 80-87.² Claims 79, 90, and 91 have been allowed. Claims 87 and 91 have been cancelled by this Amendment, and claims 69, 79, and 87 have been amended. Claims 92 and 93 have been added.

Support for the amendments may be found throughout the specification. Furthermore, the change in chemical drawing to claims 69 and 79 reflect that the bridging olefin group in the claimed compounds may be in either a cis or trans configuration. Applicant believes that the Patent Office has searched the claims for both isomeric forms. For example, claims 88 and 89 both depend from claim 69 and distinguish between the cis and trans isomers of claim 69. Moreover, claim 76 illustrated a subgenus of compounds where the double bond geometry is shown as encompassing both the cis or trans forms.

Applicant respectfully requests reconsideration of the application as amended herein. The remarks that follow are presented in order of the rejections and objections presented in the Office Action.

Prior 35 U.S.C. § 102(b) Anticipation Rejections

Claims 69, 70, and 73 remain rejected from the December 12, 2008, Office Action as anticipated under 35 U.S.C. § 102 over Gokaraju et al (WO 2004000302 which corresponds to US Patent No. 7,026,518, "Gokaraju") and Nicolosi et al (Chemo-enzymatic preparation of resveratrol derivatives, J. Mol. Catalysis B: Enzymatic (2002), 16(5-6, 223-229). (See Sept. 1, 2009, Office Action at ¶ 7.) Claim 69 has been amended herein, and Applicant respectfully traverses the rejection.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.

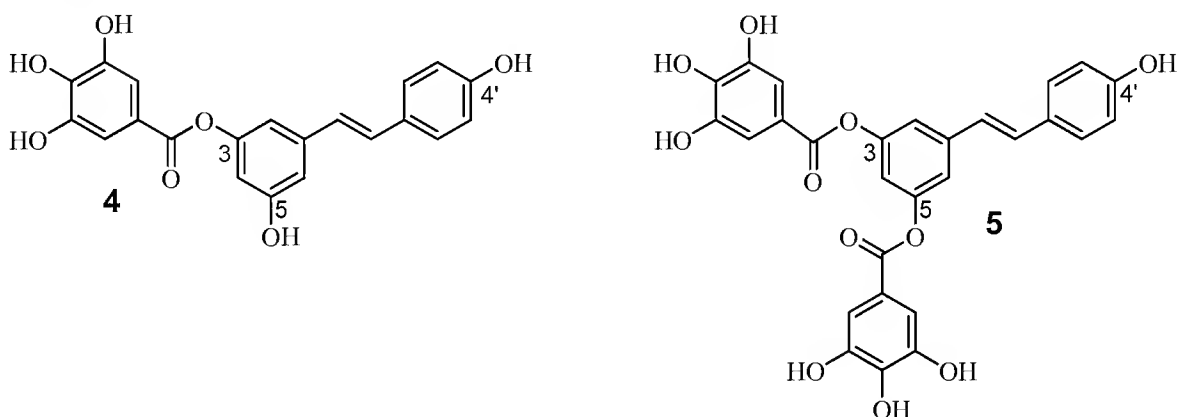
Verdegaal Brothers v. Union Oil Co. of California, 2 USPQ2d 1051, 1053 (Fed. Cir.

² The Office Action Summary erroneously included claim 82 in the summary of claim objections. Applicant cancelled claim 82 in the May 18, 2009, amendment, as reflected in the September 1, 2009, Office Action Summary. Claim 82 will not, therefore, be discussed in this response.

1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

The Office Action identifies two compounds purportedly disclosed by Nicolosi. It is believed that the Office Action's reference to Nicolosi and compounds with 3,4,5-trihydroxybenzoyl-substituents is an error. Nicolosi does not disclose those compounds, but Gokaraju does. The identified compounds are illustrated below and correspond to compounds 4 and 5 in the Gokaraju.

Gokaraju



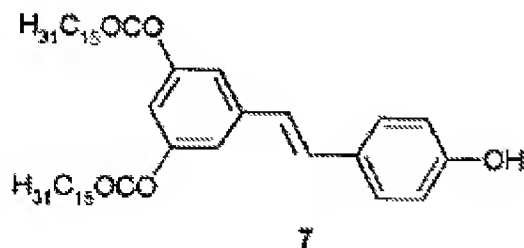
(See Gokaraju at col. 5.)

Applicant has amended claim 69 to recite “R₁ and R₂ when present are each independently selected from alkyl with at least two carbon atoms, unsubstituted aryl, and aralkyl” (emphasis added). The Markush group for R₃ has been separated from R₁ and R₂ in the claim, but remains the same in the amended claim. Amended claim 69 does not encompass compounds 4 and 5 of Gokaraju because compounds 4 and 5 are tri-substituted-aryl esters of resveratrol. The substituted aryl groups in compounds 4 and 5 of Gokaraju include three hydroxyl groups (at the 3, 4, and 5 positions). In contrast, claim 69 requires that any aryl substituent of the esters corresponding to R₁ and R₂ be unsubstituted. Gokaraju, therefore, does not anticipate or render claim 69 obvious because it does not teach or suggest removal of each of the three hydroxyl substituents in the aryl esters of compounds 4 and 5.

Amended claim 69 and dependent claims 70 and 73, therefore, are neither anticipated nor obvious in view of compounds 4 and 5 of Gokaraju.

Nicolosi

The Office Action also identifies a compound disclosed by Nicolosi, which is compound 7 on page 228 of the reference and illustrated below.



Applicant's amendment on May 18, 2009, however, excluded this compound as "4'-hydroxy-3,5-dihexadecanoate stilbene." The dihexadecanoate substituents correspond to $\text{H}_{31}\text{C}_{15}\text{OCO}$ in the illustrated compound. Thus, claim 69 and dependent claims 70 and 73 do not encompass the cited compound from Nicolosi.

Withdrawal of Prior Rejection

Applicant acknowledges the withdrawal of the anticipation rejection in view of Lockwood et al (WO 2004011423 which corresponds to US Patent No. 7,145,025) and Scaramuzzino (EP 1336602). (See Sept. 1, 2009, Office Action at ¶¶ 6.)

Prior 35 U.S.C. § 103(a) Obviousness Rejections

Claims 69 and 73 remain rejected as obvious under 35 U.S.C. § 103(a) as being unpatentable over Gokaraju et al (WO 2004000302 which corresponds to US Patent No. 7,026,518, "Gokaraju"). (See Sept. 1, 2009, Office Action at ¶¶ 5.) Claim 69 has been amended herein, and Applicant respectfully traverses this rejection, as hereinafter set forth.

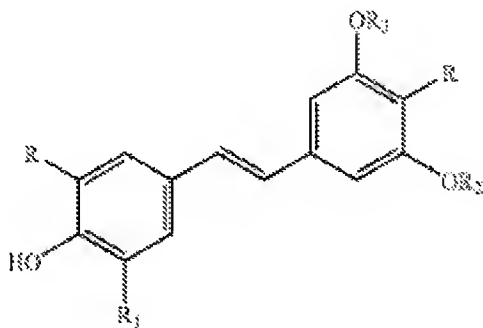
M.P.E.P. 706.02(j) describes the standard for a Section 103(a) rejection:

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must

both be found in the prior art, and not based on applicant's disclosure. In *re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). (Emphasis added).

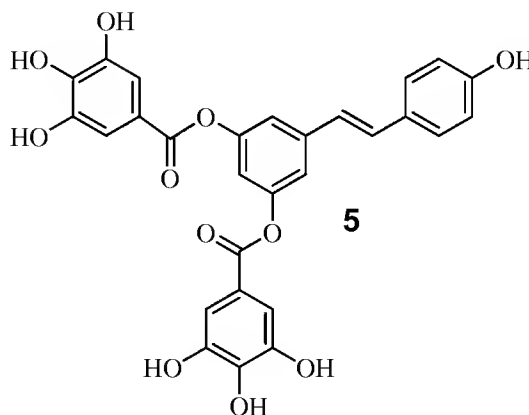
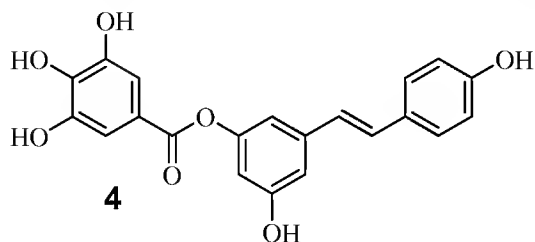
Amended claim 69 is not obvious over Gokaraju. The prior art references, even if combined, fail to disclose each and every limitation of the claimed compounds. Claim 69 covers compounds which are esters of resveratrol, namely compounds where one or more of the 3, 5, and 4' positions of resveratrol are esterified. Claim 73 depends from claim 69 and corresponds to a subgenus of compounds where the 4' position of the recited structure is hydroxyl (i.e. A_3 is hydrogen).

The Office Action indicates that Gokaraju discloses compounds of the formula:



where R and R_1 are hydrogen and R_2 and R_3 are aryl. (Office Action at ¶ 5, *citing* Gokaraju compounds 4 and 5 at col. 5-6.)

Applicant believes the statement in the Office Action was in error because R_2 and R_3 are not aryl in compounds 4 and 5. If they were, then Gokaraju discloses aryl ethers and not aryl esters. Ethers and esters are distinct chemical groups. Instead, the R_2 and R_3 groups are either hydrogen or 3,4,5-trihydroxybenzyoyl (an ester). The structures of compounds 4 and 5 are illustrated below:



(See Gokaraju at col. 5.)

Furthermore, Applicant has amended claim 69 to recite “R₁ and R₂ when present are each independently selected from alkyl with at least two carbon atoms, unsubstituted aryl, and aralkyl” (emphasis added). The Markush group for R₃ has been separated from R₁ and R₂ in the claim, but remains the same in the amended claim. Amended claim 69 and dependent claim 73, therefore, do not encompass compounds 4 and 5. Moreover, Gokaraju does not teach or suggest the compounds covered by amended claim 69, in particular compounds with unsubstituted aryl esters at the 3 and 5 positions of the claimed structure. The tri-substituted aryl groups in compounds 4 and 5 of Gokaraju include three hydroxyl groups (at the 3, 4, and 5 positions). Gokaraju, therefore, does not anticipate or render claim 69 obvious because it does not teach or suggest removal of each of the three hydroxyl substituents in compounds 4 and 5.

Accordingly, claims 69 and 73 are not obvious over Gokaraju.

Withdrawal of Prior Rejection

Applicant acknowledges the withdrawal of the obviousness rejection in view of Engler et al (Lewis Acid-Promoted Reactions of Unsymmetrically Substituted Stilbenes with 2-methoxy-1,4-benzoquinones: Stereoselective Synthesis of trans-2,3-dihydrobenzofurans, J. Org. Chem. (1995), 60(12), 3700-3706). (See Sept. 1, 2009, Office Action at ¶ 4.)

Claim Objections

Claim 75

Claim 75 is objected to because independent claim 69 recites alkyl among the Markush members for R₁, R₂, and R₃. Claim 75 recites “where R₁, R₂, and R₃ when present are each independently saturated alkyl. The Office Action indicates that it is not clear if Applicant is including alkenyl group as a variable for R₃. Applicant affirms that “alkyl” as used in claim 69 includes alkenyl (and alkynyl) and that “saturated alkyl” as used in claim 75 excludes alkenyl.

Applicant's specification defines alkyl as "a straight or branched hydrocarbon radical or group having at least one carbon atom . . . [and] alkyl groups having two or more carbons may optionally contain 1 or more sites of unsaturation, the groups being known as alkenyl groups or radicals and alkynyl groups or radicals." (Application at ¶¶ 36-37.) Thus, saturated alkyl, as used in claim 75 excludes unsaturation, namely alkenyl and alkynyl. Applicant believes that claim 75 is clear and requests withdrawal of the objection.

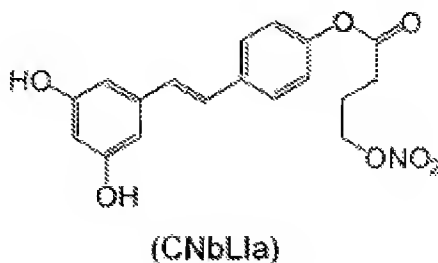
Claims 78 and 87

Claims 78 and 87 are objected to because independent claims 69 and 79 recite "unsubstituted" alkyl when R₃ is alkyl in claim 69 and when R is alkyl in claim 79. Claims 78 and 87 claim 3,5-dihydroxy-4'-isobutanoate stilbene which the Office Action asserts is an alkyl group substituted with an alkyl group. (Office Action at p. 4.)

Applicant affirms that "alkyl" as used in the claims 69 and 79 includes straight and branched alkyl (as well as alkenyl and alkynyl discussed above). Applicant's specification defines alkyl as "a straight or branched hydrocarbon radical or group having at least one carbon atom . . ." (Application at ¶ 36.)

Applicant's amendment on May 18, 2009, added the limitation to claim 69 that "when R₃ is alkyl, it is unsubstituted" and to claim 79 that where R is selected from unsubstituted alkyl with at least two carbon atoms, aryl, and aralkyl." (Emphasis added.) The amendment was made in response to a 35 U.S.C. § 102(b) rejection based on Scaramuzzino (EP Patent No. 1 336 602). At the time claims 69 and 79 were amended to include the "unsubstituted" term, Applicant remarked:

The [Dec. 16, 2008] Office Action indicates that Scaramuzzino discloses the compound:³



³ The Office Action referred to the reference's abstract for disclosure of the cited compound, but the abstract does not refer to the compound. It instead appears as compound CNbLla at page 119.

Applicant has amended claims 69-87 so that when R_3 is alkyl, it is unsubstituted. Applicant believes the amendment obviates the rejection. At the interview held March 20, 2009, the participating examiners agreed that the compound identified from Scaramuzzino did not anticipate claims 69 or its dependent claims 72 and 75 (as claim 69 is amended herein), or claims 70, 71, and 76-78 as previously presented. Applicant, therefore, respectfully requests withdrawal of the obviousness rejection of claims 69-72 and 75-78.

(May 18, 2009 Amendment at p. 16.)

Applicant's amendment was made to avoid a nitro-substituted butanoate ester (compound CNbLla), and not to limit alkyl to straight-chained alkyl only. In other words, "unsubstituted alkyl" would still include branched alkyl consistent with the definition of alkyl in the Applicant's specification.

Moreover, this is consistent with Applicant's claim 85 which depends from claim 79 and recites several branched alkyl groups (e.g. 2-propyl, 2-butyl, 2-methyl-1-propyl, 1,1-dimethylethyl, 2-pentyl, 3-pentyl, 2-methyl-1-butyl, 3-methyl-1-butyl, 2,2-dimethylpropyl, 2-hexyl, 3-hexyl, 2-methyl-1-pentyl, 3-methyl-1-pentyl, 4-methyl-1-pentyl, 3,3-dimethyl-1-butyl, 3,3-dimethyl-2-butyl, and 2-ethyl-1-butyl.) Claim 85 was not objected to on the basis that it contains "substituted alkyl."

Applicant has amended claims 69 and 79 to clarify that unsubstituted alkyl includes straight and branched alkyl. Furthermore, Applicant has amended claim 78 to make it an independent claim. Applicant has cancelled claim 87. Applicant, therefore, respectfully requests withdrawal of the objection to claim 78.

Claims 80-85

Claims 80-85 are objected to because independent claim 79 recites "unsubstituted alkyl" among the Markush members for R .⁴ Claims 80 and 83-85 recite "alkyl," and claim 82 recites "saturated alkyl." The Office Action indicates that it is not clear if Applicant is including alkenyl group as a variable for R_3 . Applicant believes reference to R_3 is an error since claims 80, 81, and 83-85 do not refer to R_3 , but do refer to R . Applicant affirms that

⁴ Inclusion of claim 82 in this objection appears to be an error and, therefore, will not be discussed. (See note 1 above.)

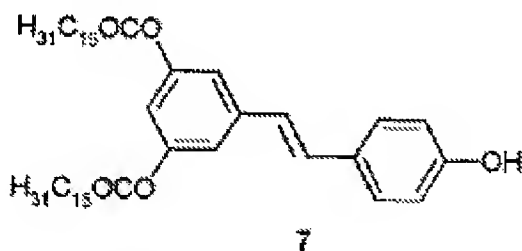
“alkyl” as used in claims 79, 80, and 83-85 includes alkenyl (and alkynyl) and that “saturated alkyl” as used in claim 81 excludes alkenyl.

Applicant’s specification defines alkyl as “a straight or branched hydrocarbon radical or group having at least one carbon atom . . . [and] alkyl groups having two or more carbons may optionally contain 1 or more sites of unsaturation, the groups being known as alkenyl groups or radicals and alkynyl groups or radicals.” (Application at ¶¶ 36-37.) Thus, saturated alkyl, as used in claim 81 excludes unsaturation, namely alkenyl and alkynyl. Applicant believes that claims 80, 81, and 83-85 are clear and requests withdrawal of the objection.

Newly added 35 U.S.C. § 102(b) Anticipation Rejection

Claims 69, 73, and 88 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Nicolosi.

The Office Action identifies a compound disclosed by Nicolosi, which is compound 7 on page 228 of the reference and illustrated below.



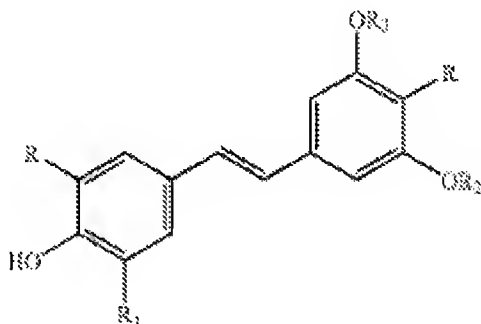
Applicant notes that the compound illustrated in the September 1, 2009, Office Action (at page 5) is shown with the group “Me-(CH₂)₁₄CO-O-.” This group is a hexadecanoate ester. Applicant’s amendment on May 18, 2009, however, excluded this compound as “4’-hydroxy-3,5-dihexadecanoate stilbene.” Thus, claim 69 and dependent claims 73 and 88 do not encompass the cited compound from Nicolosi.

Newly added 35 U.S.C. § 103(a) Obviousness Rejections

Claims 69, 73, and 88 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Gokaraju. Claim 69 has been amended herein, and Applicant respectfully traverses this rejection, as hereinafter set forth. As stated above, M.P.E.P. 706.02(j) describes the standard for a Section 103(a) rejection.

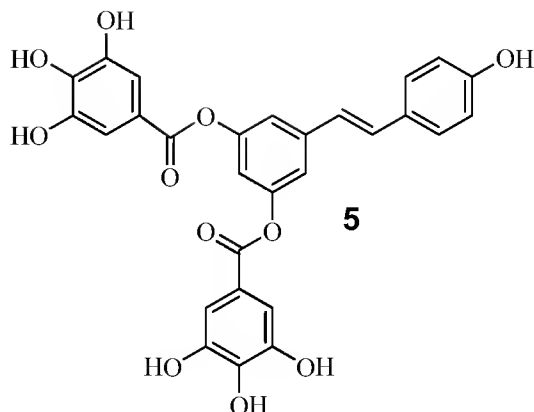
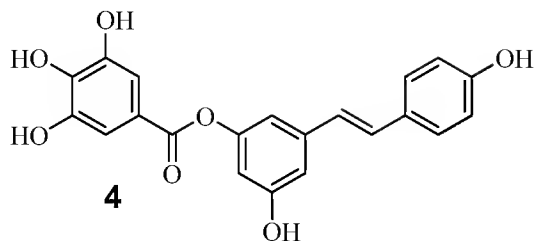
Amended claim 69 and dependent claims 73 and 89 are not obvious over Gokaraju. The cited art fails to disclose each and every limitation of the claimed compounds. Claim 69 covers compounds which are esters of resveratrol, namely compounds where one or more of the 3, 5, and 4' positions of resveratrol are esterified. Claim 73 depends from claim 69 and corresponds to a subgenus of compounds where the 4' position of the recited structure is hydroxyl (i.e. A₃ is hydrogen).

The Office Action indicates that Gokaraju discloses compounds of the formula:



where R and R₁ are hydrogen and R₂ and R₃ are aryl. (Office Action at pp. 6-7, *citing* Gokaraju compounds 4 and 5 at col. 5-6.)

Applicant believes the statement in the Office Action was in error because R₂ and R₃ are not aryl in compounds 4 and 5. If they were, then Gokaraju discloses aryl ethers and not aryl esters. Ethers and esters are distinct chemical groups. Instead, the R₂ and R₃ groups are either hydrogen or 3,4,5-trihydroxybenzyoyl (an ester). Compounds 4 and 5 correspond to the structures illustrated below.



(See Gokaraju at col. 5.)

Furthermore, Applicant has amended claim 69 to recite “R₁ and R₂ when present are each independently selected from alkyl with at least two carbon atoms, *unsubstituted* aryl, and aralkyl” (the Markush group for R₃ remains the same in the amended claim). (Emphasis added.) Amended claim 69 and dependent claims 73 and 89, therefore, do not encompass compounds 4 and 5. The substituted aryl groups in compounds 4 and 5 of Gokaraju include three hydroxyl groups (at the 3, 4, and 5 positions). Gokaraju, therefore, does not render claim 69 obvious because it does not teach removal of each of the three hydroxyl substituents in compounds 4 and 5. And contrary to the assertion in the Office Action, claim 69 does not differ from the cited art as a mere “isomer.” (Office Action at p. 7.)

Claims 69, 73, and 89 are not obvious over Gokaraju.

Allowable Subject Matter

Claims 71, 72, 74, 76, 77, and 86 stand objected to as being dependent upon rejected base claims, but are indicated to contain allowable subject matter and would be allowable if placed in appropriate independent form. It is believed that with the amendments to claim 69, the rejected base claim is allowable, and claims 71, 72, 74, 76, 77, and 86 are allowable.

Allowed Claims

Claims 79, 90, and 91 are allowable over prior art of record. Since claim 91 is redundant to claim 90, claim 91 has been cancelled.

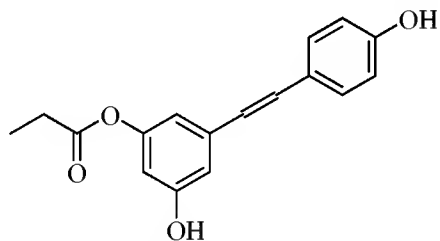
Response to Reasons for Allowance

Applicant was asked to explain the purpose of the proviso clauses in claims 69 and 79 and whether the clauses were added to avoid prior art. Applicant excluded the compounds in the proviso clauses because of the disclosure in Nicolosi of their adjacent homologs. Referring to Applicant's remarks in May 18, 2009 (Amendment and Response to Office Action at pp. 17-18), Applicant explained:

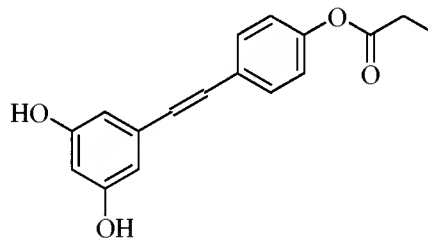
. . . Applicant has amended claims 69, 76, 79, and 84 to exclude 5,4'-dihydroxy-3-propanoate stilbene, 3,5-dihydroxy-4'-propanoate stilbene, and 4'-hydroxy-3,5-dipropenoate stilbene, the adjacent homologs of compounds 2, 4, and 5 disclosed by Nicolosi. (See pp. 226-227.) The adjacent homolog of compound 3 was already excluded by the limitation that "at least one of A₁, A₂, and A₃ is different from one another."

Also, Applicant has amended claim 69 to exclude 3,5-dihexadecanoate-4'-propanoate stilbene, the adjacent homolog of compound 8 disclosed by Nicolosi. (See p. 228.)

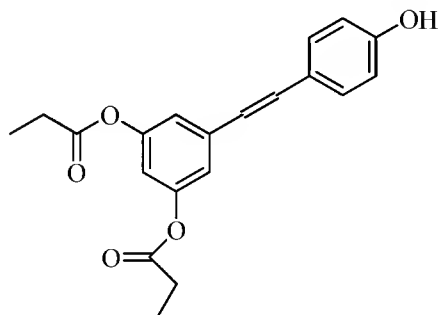
The excluded compounds are illustrated below for the clarity to the record.



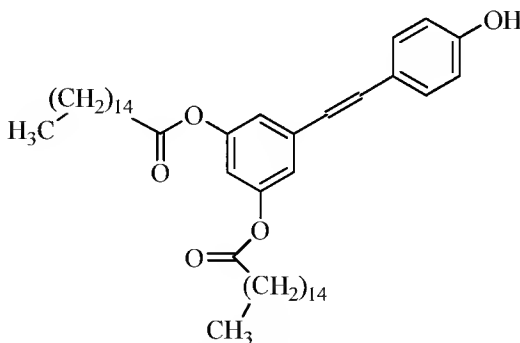
5,4'-dihydroxy-3-propanoate stilbene



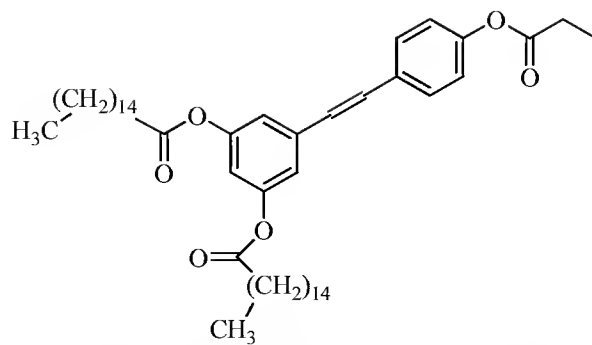
3,5-dihydroxy-4'-propanoate stilbene



4'-hydroxy-3,5-dipropenoate stilbene



4'-hydroxy-3,5-dihexadecanoate stilbene



3,5-dihexadecanoate-4'-propanoate stilbene

CONCLUSION

Claims 69-81, 83-86, 88-93 are believed to be in condition for allowance. Should the Examiner determine that additional issues remain which might be resolved by a telephone conference, he is respectfully invited to contact Applicant's undersigned attorney before taking further action.

Respectfully submitted,

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November 2, 2009
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